To: Joshua Hanson[joshua.hanson@sol.doi.gov]
From: Betenson, Matthew
Sent: 2017-09-22T18:04:34-04:00
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Subject: Additional Info
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GSENM Wildlife Summary.docx
3 Sections.docx
GSENM List of Historic and Scientific Objects of Interest (1).xlsx
GSENM Proclamation Objects Highlights_by area.docx

Josh,
Time's up and I wanted you to have more information--some of this in an unfinished condition but I hope you find it helpful.

Attached are 4 documents:

The object highlights was provided through other ways but I'm not sure it found you; it is a summary of highlights and new finds within GSENM--many of it paleontological. I've updated with a code in front for where the resource is located GS (Grand Staircase), KP (Kaiparowits), EC (Escalante Canyons).

GSENM Wildlife Summary: (b)(5) DPP (b)(5) ACP [redacted]

3 Sections: is may attempt to get more of what's not covered in the other documents

(b)(5) DPP (b)(5) ACP [redacted]

(b)(5) DPP (b)(5) ACP [redacted]

Feel free to contact me as needed over the weekend.

Matt
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Grand Staircase –Escalante National Monument

Highlighted Objects & Research

Understanding the History of Humans In the Region

(b)(5) DPP (b)(5) ACP

[redacted]

(b)(5) DPP (b)(5) ACP

[redacted]

[redacted]

Geologic Structures, Stratigraphy, and Erosional Features

(b)(5) DPP (b)(5) ACP

[redacted]

[redacted]

[redacted]

[redacted]

.

(b)(5) DPP (b)(5) ACP [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

(b)(5) DPP (b)(5) ACP

[redacted]

World-Class Paleontological Sites

(b)(5) DPP (b)(5) ACP

[redacted]

- [redacted]
- [redacted]

(b)(5) DPP (b)(5) ACP

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]

[redacted]

periods.

Opportunities for Biological Research and Discovery

(b)(5) DPP (b)(5) ACP

[redacted]

Relic Vegetation -- Isolated because of topography, many areas contain relatively undisturbed plant communities - some of which may have existed since the Pleistocene. No Mans Mesa Is an example where pinyon-juniper communities contain trees as much as 1,400 years old.

Cryptobiotic Crusts -- These crusts contain unique microbiotic communities that stabilize the highly erodible soils of the region.

Packrat Middens -- Provide Insight into climate and vegetation over the past 25,000 years.

Livestock Grazing – The Monument has partnered with Utah State University for livestock grazing research opportunities.

Watershed Intactness – A study is underway to develop decision support tools for watershed management by taking a "step-down" approach to explore aquatic intactness using the Colorado Plateau—Rapid Ecoregional Assessment (COPL—REA). The case study is stepping down the COPL—REA to the Escalante River watershed, and incorporating other data, such as Aquatic AIM and geospatial approaches (e.g., Riparian vegetation models), to determine drivers of aquatic intactness in the watershed.

Wildlife Diversity – The proclamation highlights mountain lion, black bear, desert bighorn sheep, over 200 species of birds, peregrine falcon and bald eagle as some of the more iconic species inhabiting the Monument. However, the Monument is also home to a prolific mule deer herd and a

growing number of rocky mountain elk. Pronghorn and river otter have been reintroduced to the Monument since its creation. Highlights of introductions/augmentations, research and discovery are highlighted below:

- (b)(5) DPP (b)(5) ACP [redacted]
  - [redacted]
  - [redacted] – [redacted]
  - [redacted] – [redacted]
  - [redacted] – [redacted]
  - [redacted] – [redacted]
  - [redacted] – [redacted]

[redacted]

[redacted]

(b)(5) DPP (b)(5) ACP

- [redacted] –

Citations

Titus, A. L. and Loewen, M.A. 2013. At the top of the Grand Staircase, the Late Cretaceous of Southern Utah. Indiana University Press, Bloomington, 625 pages.

Titus, A.L., Eaton, J.G., and Sertich, J., 2016, Late Cretaceous stratigraphy and vertebrate faunas of the Markagunt, Paunsaugunt, and Kaiparowits Plateaus, southern Utah: Geology of the Intermountain West, v. 3, p. 229–291.

Toevs. G.R., J.W. Karl, J.J. Taylor, C.S. Spurrier, M.Karl, M.R. Bobo, and J.E. Herrick. 2011. Consistent Indicators and Methods and a Scalable Sample Design to Meet Assessment, Inventory, and Monitoring Needs Across Scales. Rangelands 33(4): 14-20.

Grand Staircase Escalante National Monument Wildlife Summary

Threatened, Endangered or Candidate Species:

- Mexican Spotted Owl (MSO): MSO are found within each of the three physiographic provinces of the Monument. There are a total of seven Protected Activity Centers (PACs) within the Monument. The greatest concentration of MSO lies within the Grand Staircase province along the Paria River corridor and its tributaries. At least four canyons that enter the Paria are known to have MSO. MSO have also been confirmed in the Kaiparowits and Escalante Canyons provinces but not to the extent as seen in the Grand Staircase province. Critical habitat for MSO has been delineated within the Monument, again with the highest portion being in the Grand Staircase province.
- Southwest Willow Flycatcher (SWWFL): SWWFL have been documented on rare occasions along the Paria river corridor and are thought to be migrants. No nesting SWWFL have been confirmed on the Monument. Critical habitat for SWWFL was delineated within GSENM in 2012 along the Paria which happens to be on the Grand Staircase province but is directly adjacent to the Kaiparowits plateau. However, this critical habitat is unoccupied and is not largely important to the species recovery and was opposed by Monument staff at the time of designation.
- California Condor: Condor were released on the Vermilion Cliffs National Monument to the south of GSENM. Condor are occasionally seen flying over the Grand Staircase province but are not known to nest or even forage much over the Monument.

Sensitive Species:

- Greater Sage-Grouse (GRSG): GRSG are found only within the Grand Staircase province of the Monument. This area known as the Skutumpah Terrace is home to the southern-most population of GRSG in their current range. GRSG on the Monument exist in very low numbers. Habitat work is currently proposed in the area to bring the population back up.
- Peregrine Falcon (PEFA): PEFA are found and well distributed in each geographic province of the Monument. PEFA are doing extremely well and are commonly seen.
- Gold Eagle (GOEA): GOEA are found in each geographic province of the Monument. Their numbers are augmented in winter months when GOEA from areas to the north arrive to winter on the Monument. GOEA nests are found throughout the Monument.
- Bald Eagle (BAEA): BAEA are found throughout the Monument in winter months only. BAEA have recovered well since de-listing and are a common winter resident.

Game Species:

- Pronghorn Antelope: Pronghorn were reintroduced to the Monument on the Kaiparowits province back in 1999 and concluding in 2005. They have since moved on to the Grand Staircase province as well but the vast majority reside in the Kaiparowits. Pronghorn appear to be stable on the Monument.

- Mule Deer: Mule Deer are found throughout the Monument but are very low in number in the Kaiparowits and Escalante Canyon provinces due to low abundance of suitable habitat. The Grand Staircase province is home to a very iconic herd known as the Paunsaugunt herd. This herd has numbers approaching 10,000 and is very popular for hunting and shed antler gathering. Mule deer numbers are currently increasing on the Monument. The area east of Kanab is critical deer winter range for this iconic herd and much habitat work has been accomplished to date to improve habitat condition.
- Elk: Elk are found throughout the Monument but are very low in number in the Kaiparowits and Escalante Canyon provinces due to low abundance of suitable habitat. The Grand Staircase province is home to several hundred year-round elk. Elk are increasing on the Monument.
- Desert Big Horn Sheep: Desert Big Horn sheep have been released now and again on the Monument since the mid 1970's with the focus being mostly on the Kaiparowits province. In recent history, there have also been augmentations on the Escalante Canyons province. These two provinces now have roughly the same population of bighorn sheep and both areas are increasing. Desert bighorn sheep are doing extremely well currently and continue to expand their range. Recently, more and more sheep are being reported in areas previously not occupied on the Grand Staircase province along the Paria river corridor and closer to Kanab.
- Black Bear: Black bear are extremely rare on the Monument but have been confirmed in all provinces.
- Cougar: Cougar are found throughout the Monument and are probably fairly common although rarely seen. The Grand Staircase province has the highest population which coincides with the higher population of game species such as mule deer and elk.
- Bats: Bat monitoring has confirmed 18 species within the Monument. Bats are widespread but each species tends to use habitats differently and reside at different elevation gradients. Many of the 18 species of bats are considered sensitive.

<u>Special Status Fish Species:</u>

- Six native fish species reside in the Escalante River or tributaries thereto. All of these species except the dace are considered sensitive due to their ties with the Colorado river ecosystem. The main stem of the Escalante river has confirmed speckled dace, bluehead sucker, and flannelmouth sucker. Tributaries have confirmed roundtail chub, Colorado river cutthroat trout and mottled sculpin. Many non-native species also reside in this river ecosystem.

Grand Staircase

A wide variety of formations, some in brilliant colors, have been exposed by millennia of erosion. The monument contains significant portions of a vast geologic stairway, named the Grand Staircase by pioneering geologist Clarence Dutton, which rises 5,500 feet to the rim of Bryce Canyon in an unbroken sequence of great cliffs and plateaus. (Procalamtion 6920)

include relict grasslands, of which No Mans Mesa is an outstanding example

- Bull Valley Gorge- a deeply incised slot canyon; popular hike; MSO Habitat
- No Man's Mesa
- Vermillion Cliffs – see highlights
- White Cliffs see highlights
- Paria Town Site; Historic Settlement
  "Old Paria Townsite was established in 1874 on the bench above the eastern bank of the Paria River by Mormon settlers who attempted to farm the bottomlands. Site was abandoned in 1890." Abby, Edward and Hyde, Philip. Slickrock p.46.
- Mollies Nipple- "an erosional remnant is a major landmark in the area." UT BLM Statewide Final Wilderness EIS, 1990
- Remnants of Ancestral Puebloan Culture; Prehistoric Structures and features, Rock Writing/Art

  Virgin Ancestral Puebloan /Virgin and Kayenta Ancestral Puebloan Relationships; Fremont Culture

- Plant: Ute ladies-tresses (Spiranthes diluvialis) ; Threatened

Kaiporowits

the Kaiparowits Plateau. That Plateau encompasses about 1,600 square miles of sedimentary rock and consists of successive south-to-north ascending plateaus or benches, deeply cut by steep-walled canyons. Naturally burning coal seams have scorched the tops of the Burning Hills brick-red. Another prominent geological feature of the plateau is the East Kaibab Monocline, known as the Cockscomb.

including the 130-foot-high Escalante Natural Bridge, with a 100 foot span, and Grosvenor Arch, a rare "double arch."

Kaiparowits Plateau's stratigraphy provide significant opportunities to study the paleontology of the late Cretaceous Era. Extremely significant fossils, including marine and brackish water mollusks, turtles, crocodilians, lizards, dinosaurs, fishes, and mammals, have been recovered from the Dakota, Tropic Shale and Wahweap Formations, and the Tibbet Canyon, Smoky Hollow and John Henry members of the Straight Cliffs Formation. Within the monument, these formations have produced the only evidence in our hemisphere of terrestrial vertebrate fauna, including mammals, of the Cenomanian-Santonian ages. This sequence of rocks, including the overlaying Wahweap and Kaiparowits formations, contains one of the best and most continuous records of Late Cretaceous terrestrial life in the world.

"Situated at the intersection of three major prehistoric cultures the Plateau has long been a magnet for archeological study. It has been recognized that the Kaiparowits Plateau might contain important clues that would aid in answering questions in the archeology of the Southwest." Utah Wilderness Coalition. Wilderness at the Edge. p. 147 and Lister, Florence C., Kaiparowits Plateau and Glen Canyon prehistory, an interpretation based on ceramics, 1964.

"Fiftymile Mountain Archeological District contains more than 400 sites including Anasazi habitations and granaries. Important scientific value. Some of the most significant cultural resources in the Four Corners area. Archaeological District (47,325 acre) has been nominated to NRHP. Majority of sites are masonry structures (of 1-10 rooms). Most are of Virgin Anasazi origin but include sites attributed to Fremont, Hopi, and Paiute. Navajo are also expected of occupying the area. 4,000 total sites may be located in WSA." Utah BLM Statewide Final Wilderness EIS, 1990.

- See highlights for dino finds
- Devil's Garden – "oddly shaped arches (including Metate Arch) and rock formations in the hills at the foot of the cliffs marking the Kaiparowits Plateau." UT BLM Statewide Final Wilderness EIS, 1990

Escalante Canyons

The upper Escalante Canyons, in the northeastern reaches of the monument, are distinctive: in addition to several major arches and natural bridges, vivid geological features are laid bare in narrow, serpentine canyons, where erosion has exposed sandstone and shale deposits in shades of red, maroon, chocolate, tan, gray , and white. Such diverse objects make the monument outstanding for purposes of geologic study.

renowned Hole-in-the-Rock Trail as part of their epic colonization efforts. Sixty miles of the Trail lie within the monument, as does Dance Hall Rock, used by intrepid Mormon pioneers and now a National Historic Site.

- Remnants of Ancestral Puebloan Culture; Including Fremont Prehistoric Structures and features, Rock Writing/Art
- Dance Hall Rock "Dance Hall Rock/Hole-in-the-Rock Trail. While the Hole-in-the-Rock Trail was under construction in 1879, Mormon Pioneers camped at Fourtymile Spring and held meetings and dances in the shelter of Dance Hall Rock. Designated historical site by DOI 1970." Utah Wilderness Coalition. Wilderness at the Edge. P 182.
- Boulder Mail Trail - "Boulder Mail Trail. Used to carry mail between Escalante and Boulder beginning in 1902. Much of trail still visible where necessary to construct through slickrock. Nominated to NRHP. Popular backpacking route." Utah BLM Statewide Final Wilderness EIS, 1990.
- Lower Calf Creek Falls- major attraction "Calf Creek Canyon is characterized by red alcoved walls, 2 waterfalls, and extensive expanses of white slickrock. Lower Calf Creek Falls drops 126'

and Upper Calf Creek's drop is 86'. High educational values associated with interpretation of these areas.” UT BLM Statewide Final Wilderness EIS, 1990

Grand Staircase-Escalante National Monument List of Historic and Scientific Objects

Object	Description	Location	Source	Proposal Unit
(b)(5) DPP (b)(5) ACP	Perennial streams enter entrenched canyons in white Navajo and deep-red Windgate Sandstone. Deer Creek, Steep Creek, and The Gulch have perennial flows of clear, cold water. The Gulch leads up into the spectacular Circle Cliffs where remarkable specimens of petrified wood (60 ft logs) exist in the Morrison and Chinle formations.	Escalante - Stepp Creek WSA	UT BLM Statewide Final Wilderness EIS, 1990	(b)(5) DPP (b)(5) ACP
	White Canyon cuts through the Kaibab Limestone to the Coconino Sandstone, the oldest stratum in the Upper Escalante drainage	Escalante-Studhorse Peaks Unit	Davidson, E.S., Geology of the Circle Cliffs Area, Garfield and Kane Counties, Utah, 1967. p. 10.	
	Big Spencer Flat Road and V Road is site of "thunderball" iron concretions known as Moqui Marbles. These oddities weather out of the Navajo sandstone and are a popular recreation feature.	North Escalante Canyons WSA	Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah. P. 16, and UT BLM Statewide Final Wilderness EIS, 1990	
	The Waterpocket Fold tops out at Deer Point (7,243 feet). Most of the Waterpocket Fold is in the Capitol Reef National Park where it is a major landmark.	Escalante-Cold Mesa unit	Utah Wilderness Coalition. Wilderness at the Edge. P. 189, and Davidson, E.S., Geology of the Circle Cliffs Area, Garfield and Kane Counties, Utah, 1967. p. 10.	
	The inner gorges of the Upper Moody Canyons cut into the relatively harder Kaibab Limestone and Coconino Sandstone (oldest exposed layer in this region).	Escalante-Cold Mesa unit	Utah Wilderness Coalition. Wilderness at the Edge. P. 189	
	Dry Valley Creek Canyon: A waterfall blocks the entrance to Dry Valley Creek Canyon and consequently, the canyon remains in its natural condition. A perennial stream cuts through alluvial benches. It is a relict and probably possesses important scientific values.	Mud Springs Canyon WSA	UT BLM Statewide Final Wilderness EIS, 1990	
	The East Kaibab Monocline or the Cockscomb is unique as a Colorado Plateau structure. Its alignment with the Paunsaugant, Sevier, and Hurricane faults suggest that it too could be a fault at depth. It extends from the Colorado River north to Canaan Peak and is a major landmark.	Kaiparowits Plateau - The Cockscomb WSA	UT BLM Statewide Final Wilderness EIS, 1990	
	The Blues - a Cretaceous shale badlands, richly colored and contrasting with adjacent pink sandstone cliffs that forms a significant part of the vista for visitors to Bryce Canyon National Park. The Kaiparowits formation is well exposed here represents an accumulation of exceedingly rapid proportions and an immature sedimentary region which is not well displayed in any other formation in the Colorado Plateau.	The Blues WSA (near Bryce Canyon)	UT BLM Statewide Final Wilderness EIS, 1990	
	Fiftymile Mountain is a complex of deep canyons, upwarps, monoclines, liogbacks and a spectacular 42-mile long Straight Cliffs wall, topping a thousand-foot-high cliff line of the Summerville, Morrison and Dakota formations. This complex marks the edge of the Kaiparowits Plateau.	Kaiparowits Plateau - Fiftymile Mountain WSA	UT BLM Statewide Final Wilderness EIS, 1990	
	Ancient coal fires of Right Hand Collet Canyon have left surface remains in the form of clinkers and deep red ash. These remains dominate the visual character of the drainage.	Carcass Canyon WSA	UT BLM Statewide Final Wilderness EIS, 1990	

Date Printed:

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
(b)(5) DPP (b)(5) ACP	Arch Span of 40 feet located in Calf Canyon, and is visible from the Alvey Wash road.	Carcass Canyon WSA	UT BLM Statewide Final Wilderness EIS, 1990	(b)(5) DPP (b)(5) ACP
	Burning Hills - naturally occurring underground coal fires have turned steep and rugged exposed hilltops a distinctive red.	Burning Hills WSA	UT BLM Statewide Final Wilderness EIS, 1990	
	Devils Garden - oddly shaped arches (including Metate Arch) and rock formations in the hills at the foot of the cliffs marking the Kaiparowits Plateau.	Carcass Canyon WSA	UT BLM Statewide Final Wilderness EIS, 1990	
	This area possesses exceptional scenic values and contains a portion of the Cockscomb, a prominent southern Utah geologic feature. The Cockscomb forms 2 parallel knife-edged ridges with a bisection V-shaped trough. Flatirons, small monoliths, and other colorful formations are present on the west ridge. These major features of south central Utah cover over 4,000 acres.	Mud Spring WSA	UT BLM Statewide Final Wilderness EIS, 1990	
	An interesting fold in Henrieville Creek along the northwest boundary of the WSA is of geologic interest and a sightseeing attraction.	Mud Spring WSA	UT BLM Statewide Final Wilderness EIS, 1990	
	Window Wind Arch above the middle trail has scenic value because of its location on the very edge of the Straight Cliffs. The Straight Cliffs escarpment is major landmark in south-central Utah and an important scenic feature within view from the Hole-in-the-Rock road. Woolsey Arch is located in Rock Creek Basin, an area of colorful Navajo sandstone and high cliffs.	Fifty Mile Mountain WSA	UT BLM Statewide Final Wilderness EIS, 1990	
	Unique because it consists of 2 prominent southern Utah physiographic systems. It includes the eastern most extension of the White Cliffs component of the famous ascending staircase, cliff and terrace physiography, the Vermillion, White, and Pink Cliffs; and east of the Paria river, the dividing point is the landscape representative of the Glen Canyon physiography of sculptured, dissected, and exposed Navajo sandstone . The area where these merge between Deer Range and Rock Springs Bench is a highly scenic complex and colorful landscape.	Paria-Hackberry WSA	UT BLM Statewide Final Wilderness EIS, 1990	
	The Vermillion Cliffs with its associated Wingate Sandstone cliffs, colorful Chinle badlands, and canyons with there multiple colors and the intensity of coloration contribute to high scenic quality. Included in this landscape are Hackberry Canyon, Paria River Valley, Hogeye Canyon, the Pilot Ridge-Starlight Canyon-Kirbys Point area and Eight Mile Pass.	Paria-Hackberry WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	An area of high scenic value include the breaks of the Rush Beds and the west wall of Cottonwood Canyon, upper tributaries to Hackberry Canyon, Death Valley Draw, and the exceptional Navajo Sandstone domes and fin formations on either side of lower Hackberry Canyon.	Paria-Hackberry WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	Four ONA's designated to preserve "unique scenic values and natural wonders". North Escalante Canyon (5,800 acres), The Gulch (3,430), Escalante Canyons (480 acres), Phipps-Death Hollow (12 more outside WSA)	North Escalante Canyons WSA.	UT BLM Statewide Final Wilderness EIS, 1990	

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
[redacted]	This area is geologically complex and has some of the most outstanding canyon scenery in the country. Harris Wash a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo Sandstone.	North Escalante Canyons WSA.	UT BLM Statewide Final Wilderness EIS, 1990	[redacted]
	A unique feature of the Burning Hills is the red coloration in the landscape is the result of geological changes attributed to the naturally occurring coal fires. The coloration creates a highly scenic area.	Burning Hills WSA	UT BLM Statewide Final Wilderness EIS, 1990	
	The White Cliffs are high white or yellow cliffs of Navajo Sandstone. Vary in height from 600' at Deer Springs Point bench to 1,200' at Deer Springs Point and the Sheep Creek-Bull Valley Gorge-Paria River confluence. The cliffs consistently reach a 1000' in height and the cliff line is interrupted by 8 canyons.	Paria-Hackberry WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	This area contains twenty-four undeveloped springs. Ten are located in upper Paria, 6 in Hackberry, 5 on the eastern border of Cottonwood Creek, and 3 on west boundary. There are also 6 developed springs. These are significant features in this arid environment.	Paria-Hackberry WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	Phipps-Death Hollow ONA {12/23/70) contains 34,288 acres managed to preserve scenic values and natural wonders.	Phipps-Death Hollow WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	Arches. Peek-a-boo Rock, Wahweap Window, Jacob Hamblin Arch, Starlight Arch, Cobra Arch, Sam Pollack Arch, Woolsey Arch, and several more unnamed arches and natural bridges.	Kaiparowits Plateau and adjacent areas	Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah.	
	Sand-calcite crystals from the Morrison Formation. These crystals are the first reported occurrence from rocks of Jurassic age and only reported sand crystals in southern Utah.	Kaiparowits Plateau	Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah.	
	Circle Cliffs in the northeast portion of WSA features intensively colored red, orange, and purple Chinle mounds and ledges at the base of Wingate Sandstone cliffs. Vertically jointed cliffs banded with red, yellow, and white colors and bench tops and upper cliff faces possess innumerable orange-red Kayenta Sandstone knobs. One of most spectacular and distinctive landscapes on the Colorado Plateau.	Steep Creek WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	Area includes Escalante Natural Bridge (130' high, 100 ' span) and 4 other natural bridges and arches.	Phipps-Death Hollow WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	The Gulch is a major geologic feature. Deeply entrenched very sheer red straight line Wingate Sandstone walls. High ridges and slickrock peaks. Ridges drop fairly abruptly to canyons below.	Steep Creek WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	Lamanite Natural Bridge. Actually a large arch with good symmetry and form. Located in an impressive setting in a deep side canyon to The Gulch.	Steep Creek WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	Petrified wood. Upper Gulch-Circle Cliffs contains large, unbroken logs of petrified wood (NEA 2,213 acres). Maximum log length 36'. The scenic values of these logs is enhanced by their colorful surroundings.	Steep Creek WSA.	UT BLM Statewide Final Wilderness EIS, 1990	

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
(b)(5) DPP (b)(5) ACP	Outstanding scenic values include the upper portion of Paradise Canyon where sandstone in the Wahweap Formation outcrops as colorful walls and cliffs. Ponderosa pine growing in the sandstone enhance the scenic values. Two sandstone monoliths or fins above Alvey Wash are prominent geological features.	Death Ridge WSA.	UT BLM Statewide Final Wilderness EIS, 1990	(b)(5) DPP (b)(5) ACP
	The area contains a unique canyon and bench system. The entire ISA contains outstanding scenery. Examples include the area east of Horse Canyon. Four canyons have isolated 10 benches of varying size . Many bench tops have intricate pattern of innumerable orange-red Kayenta Sandstone knobs. Wolverine Canyon and Death Hollow have extremely narrow and convoluted sections. Another feature, Harris Wash a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo Sandstone.	North Escalante Canyons/The Gulch ISA.	UT BLM Statewide Final Wilderness EIS, 1990	
	Mollie's Nipple, an erosional remnant is a major landmark in the area.	Kaiparowitz Plateau.	UT BLM Statewide Final Wilderness EIS, 1990	
	Natural Arches. Sam Pollock Arch, located at the head of a tributary drainage of Hackberry Canyon, and Starlight Arch located west of No Man's Mesa.	Paria-Hackberry WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	Area of diverse geology represented by spectacular deep canyons. The Escalante River Canyon is 1100 feet deep. The canyon walls are rough and broken and the canyon is narrow and it meanders. Pure white to golden sandstone has been eroded into expanses of slickrock. Death Hollow Canyon is 1,000' feet deep and meandering . The extensive upper basin through which Mamie Creek flows is a extremely dissected area of canyons, tanks, other formations. Red layers of Carmel Formation cap high mesas and ledges of the exposed Kayenta Formation.	Phipps-Death Hollow WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	Petrified wood deposits just west of the Old Paria Townsite and in Hackberry Canyon. Both are in the Chinle formation.	Paria-Hackberry WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	All the topographic features of the Kaiparowits region have been developed in sedimentary rocks. The Kaiparowits Plateau is a slightly tilted sedimentary mass that extends as a narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah.	Kaiparowitz Plateau.	UT BLM Statewide Final Wilderness EIS, 1990	
	Paria River from Colorado River to its source, identified by NPS as possessing values that may be of national significance, potential to be included in the National Wild and Scenic River System.	Paria-Hackberry WSA.	UT BLM Statewide Final Wilderness EIS, 1990	

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List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
[redacted]	Escalante River from Lake Powell to its source, a section of 14.9 miles, was designated as for study as a candidate Wild and Scenic River by the Secretary of the Interior on 10/11/70.	Phipps-Death Hollow WSA.	UT BLM Statewide Final Wilderness EIS, 1990	[redacted]
	Lower Calf Creek Falls. Calf Creek Canyon is characterized by red alcoved walls, 2 waterfalls, and extensive expanses of white slickrock. Lower Calf Creek Falls drops 126' and Upper Calf Creek's drop is 86'. High educational values associated with interpretation of these areas.	Phipps-Death Hollow WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	The area contains 40 miles of perennial streams, a significant feature in this arid environment.	Phipps-Death Hollow WSA.	UT BLM Statewide Final Wilderness EIS, 1990	
	Fossil assemblage photographs. Typical mollusks from Tropic Shale, south of Escalante include straight cone cephalopods, ammonites, gastropods, and pelecypods and Cretaceous sharks teeth from the Straight Cliffs Formation.	Kaiparowits Plateau	Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah. pp 14-15.	
	Gray Cliffs/Pink Cliffs - This sequence of rocks may contain one of the best and most continuous records of Late Cretaceous terrestrial life in the world. Formation has yielded early mammals, lizards, dinosaurs , crocodillians, turtles, mollusks.	Kaiparowits Plateau - The Blues WSA	BLM, Escalante/Kanab RMP - Grand Staircase Ecosystem Analysis, 1994	
	Fossils deemed by the Museum of Northern Arizona in a 1976 study to be of major importance. They are found in the Cretaceous Wahweap Formation outcrops and include abundant fragments of turtle shells and dinosaurs, as well as several crocodile teeth. There is an excellent chance that mammal fossils will be found.	Kaiparowits Plateau - Nipple Bench Unit	BLM, Kaiparowits Power Project Environmental Impact Statement, 1976.	
	The Straight Cliffs Formation is limited to the southern Utah area. It contains primitive mammals including one of the potentially oldest marsupial fossils identified.	Kaiparowits Plateau	BLM, Warm Springs Project Preliminary Draft EIS, 1996.	
	Invertebrate and vertebrate specimens found Straight Cliffs, Tropic Shale, and Dakota Formations. 13 collection sites recorded (gastropods, cephalopods in upper Cretaceous Formations, vertebrate in Dakota and Tropic Shales). Likely to occur along entire length of the Straight Cliffs	Carcass Canyon WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	The Kaiparowits is of interest in understanding the evolution of mammals and other terrestrial vertebrates. Very little is known of Cretaceous mammals prior to the latest part of that period. The mid-Cretaceous mammalian twilight zone is spanned by the fossiliferous, terrestrial rock units of the Kaiparowits region. They contain unique evidence bearing on the early diversification of important mammalian groups of the Late Cretaceous. The thickness, continuity, and broad temporal distribution of the Kaiparowits sequence provides the opportunity to document changes in terrestrial vertebrate assemblages over a wide span of Late Cretaceous time.	Kaiparowits Plateau	Eaton, Jeffrey G, and Cifelli, Richard L. Preliminary report on Late Cretaceous mammals of the Kaiparowits Plateau, southern Utah, 1988	

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
[redacted]	Extremely significant fossils including marine and brackish water mollusks, turtles, crocodillians, lizards, dinosaurs, fishes, and mammals have been recovered from the Dakota formation, Tropic Shale, Straight Cliffs Formation (Tibbet Canyon, Smoky Hollow, and John Henry members), and Wahweap formation in the area around the proposed Andalex mine and some localities lie directly along the proposed haul routes. This sequence of rocks (including the overlying Wahweap and Kaiparowits formations) contain perhaps the best and most continuous record of Late Cretaceous terrestrial life in the world.	Kaiparowits Plateau	Eaton, Jeffrey G., Personal correspondence to Mr. Mike Noel, BLM, 1991	[redacted]
	Sixty sites have been recorded and the potential for additional sites is exceptionally high. Sites discovered to date include lithic scatters, 13 rockshelters (some w/storage cysts and rock art), 1 pithouse village site and 1 structure (probably of Anasazi origin). Some of the rock art and rock shelter and 1 campsite are potentially eligible for nomination to the NRHP.	North Escalante Canyons/The Gulch ISA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Friendship Cove Pictograph site nominated to NRHP. This site consists of a set of large Fremont style pictographs painted on the face of a large sandstone cliff.	Phipps-Death Hollow ISA, eastern part	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Forty-four sites of diverse types have been recorded in the area. 14 rock art (petroglyph and pictographs sites (2 from Fremont culture)), 1 Pit-house village site, lithic scatters of Paiute and Anasazi , and 6 rockshelters have been discovered. Potential for more sites is good.	Phipps-Death Hollow ISA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Situated at the intersection of three major prehistoric cultures the Plateau has long been a magnet for archeological study. It has been recognized that the Kaiparowits Plateau might contain important clues that would aid in answering questions in the archeology of the Southwest.	Kaiparowits Plateau	Utah Wilderness Coalition. Wilderness at the Edge. p. 147 and Lister, Florence C., Kaiparowits Plateau and Glen Canyon prehistory, an interpretation based on ceramics, 1964.	
	Fiftymile Mountain Archeological District contains more than 400 sites including Anasazi habitations and granaries. Important scientific value. Some of the most significant cultural resources in the Four Corners area. Archaeological District (47,325 acre) has been nominated to NRHP. Majority of sites are masonry structures (of 1-10 rooms). Most are of Virgin Anasazi origin but include sites attributed to Fremont, Hopi, and Paiute. Navajo are also expected of occupying the area. 4,000 total sites may be located in WSA.	Fiftymile Mountain WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Sixty-five sites have been recorded. They include lithic and ceramic scatters, masonry structures (granaries and storage cysts), one rock shelter. Masonry and some lithic/ceramic associated with Virgin Anasazi/Virgin-Kayenta Anasazi. Two are Pueblo 11-111 time period. Some sites are associated with Paiute-age or Archaic-age peoples. At least 8 sites in this area are eligible for nomination to the NRHP.	WahweapWSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	High concentration of prehistoric sites. Although surveys are incomplete for the Warm Creek unit more that 600 sites have been found ranging from lithic scatters and campsites to rockshelters.	Kaiparowits Plateau/Warm Creek unit	BLM, Kaiparowits power project environmental impact statement, 1976.	

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
(b)(5) DPP (b)(5) ACP	Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high.	Kaiparowits Plateau/Squaw Canyon unit	ERT, 1980, Kaiparowits coal development and transportation study, final report.	(b)(5) DPP (b)(5) ACP
	Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The sites represent complex associations of features and artifacts and indicate permanent or extensive camps in rock shelters.	Kaiparowits Plateau/Nipple Bench unit	Fish, Paul, Preliminary Report Kaiparowits Power Project.	
	Six sites have been recorded. One is Pueblo II Anasazi occupation site, with others unidentified.	Burning Hills WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	One hundred-five sites (primarily lithic scatters) have been recorded covering a broad period of occupation. Ten rockshelters w/storage cysts or storage caches, 1 w/masonry room, 3 w/granaries associated with Anasazi or Fremont have been discovered. Additional sites include petroglyph and pictograph panels associated with shelter sites and 1 burial site.	Carcass Canyon WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	One hundred thirty-four documented sites represent virtually all known prehistoric cultures in southern UT (Archaic, Fremont, Anasazi, Southern Paiute). 8,000 years of prehistory are represented. The sites primarily represent temporary habitation by hunter gatherers.	Death Ridge WSA	BIM Utah Statewide Wilderness EIS, 1990, and Hauck, F.R.,Cultural Resource Evaluation of South-Central Utah, 1977-1978.	
	The area contains 41 recorded sites and based on surveys may contain exceptionally high densities of sites.. Known sites include rockshelters, pit houses, lithic scatters, and masonry structures. Pictograph panels are in Deer Creek Canyon and petroglyphs are found in Snake Creek Canyon. A study located and estimated 612 sites per 23,000 acres, 564 potentially eligible for nomination to the NRHP (southern border ofWSA). Another inventory estimated 360 sites per 23,000 acres at the northern border of the WSA.	Paria-Hackberry WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	The Kayenta Pueblo culture inhabiting the Straight Cliff and portions of the Escalante River drainage between AD. 1000 and 1200 were likely in contact with the Fremont culture. Although both inhabited the area at the same time and competed for limited agricultural lands there is no evidence of open conflict during this time. Some modifications of pottery making techniques between the two cultures indicates that there was trade and exchange between them. Little is known positively about the Kayenta culture, and additional research in this area could provide valuable insight on interactions between the two cultures.	Straight Cliffs WSA	Lister, Kaiparowits Plateau and Glen Canyon Prehistory: An interpretation based on ceramics. 1964.	
	Dance Hall Rock/Hole-in-the-Rock Trail. While the Hole-in-the-Rock Trail was under construction in 1879, Mormon Pioneers camped at Fourtymile Spring and held meetings and dances in the shelter of Dance Hall Rock. Designated historical site by DOI 1970.	Two miles west of the Glen Canyon NRA on the Hole-in-the-Rock Trail	Utah Wilderness Coalition. Wilderness at the Edge. P 182.	
	Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah.	Historic trail running from Escalante to Hole in the Rock in Glen Canyon NRA	Lambrechtse, Rudi. Hiking the Escalante, 1985.	

Date Printed:

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
[redacted] (b)(5) DPP (b)(5) ACP	Boulder Mail Trail. Used to carry mail between Escalante and Boulder beginning in 1902. Much of trail still visible where necessary to construct through slickrock. Nominated to NRHP. Popular backpacking route.	Phipps-Death Hollow ISA	Utah BLM Statewide Final Wilderness EIS, 1990.	(b)(5) DPP (b)(5) ACP [redacted]
	Boynton Road. Constructed 1909 as short cut between Escalante and Salt Gulch. Abandoned after 2 years because of flooding . Visible over approx 9 of its 10 miles.	Phipps-Death Hollow ISA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Escalante-Boulder telephone line: First Boulder-Escalante telephone line constructed by Forest Service in 1911 providing first phone service to area. Still visible between Antone Flat and Sand Creek.	Phipps-Death Hollow ISA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Washington Phipps grave. A historical grave site of an early pioneer shot in 1878 in a dispute with his partner John Boynton. Provided the namesake for the area.	Phipps-Death Hollow ISA	Lambrechtse, Rudi. Hiking the Escalante, 1985.	
	Old Boulder Road. Main route between Escalante and Boulder until the CCC built Hell's Backbone Road and Highway 12 in l 930's to replace it.	Phipps-Death Hollow ISA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	The Hattie Green mine, an early copper working located on the crest of The Cockscomb.	The Cockscomb WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Old Paria Townsite was established in 1874 on the bench above the eastern bank of the Paria River by Mormon settlers who attempted to farm the bottomlands. Site was abandoned in 1890.	adjacent to Paria-Hackberry WSA	Abby, Edward and Hyde, Philip. Slickrock p.46.	
	Old Paria Townsite movie set. Built in the 1960's to film several movies. Now abandoned but still a popular recreation destination.	adjacent to Paria-Hackberry WSA	Abby, Edward and Hyde, Philip. Slickrock p.46.	
	Riparian zones are corridors for many of the region's species, including neotripocal migrant birds. The corridors (including the Escalante, and Paria Rivers and Johnson Creek and their tributaries) bisect the region north to south allowing for exchange of individuals among different animal populations. The importance of movement corridors to the long term viability of animal populations is of great scientific and management interest. This area would afford many opportunities to enhance this ecological issue.	Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab including the Escalante, Paria rivers and Johnson Creek	Edwards, Tom, 1996; Knopf, 1985; Armbruster and Lande, 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al., 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978, Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.	

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
[redacted]	25 miles of riparian corridor in unit. Connects mountains to desert lowlands. Has great concentration of hanging gardens and riparian vegetation, including relictual populations in canyon bottoms. Also supports many rock crevice communities. Connects other protected areas. High plant endemism, due to large extent of parent material exposure.	Escalante River	BLM Wilderness EIS; Knopf, 1985; Shulz, 1993; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al., 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.	[redacted]
	Riparian corridor links high country to lowland desert scrub. Connects protected areas. Has high concentrations of isolated communities: hanging garden, rock crevice and canyon bottom communities. Also has an abundance of packrat middens.	Paria River	Spaulding, 1979; BLM Wilderness EIS; Knopf, 1985; Shulz, 1993; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al., 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.	
	Fifty miles of perennial streams including the Paria River (which is a wild and scenic river inventory segment). Riparian vegetation covers 500 acres.	Paria-Hackberry WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
(b)(5) DPP (b)(5) ACP	from the Mojave, Arizona deserts and northern Utah are all found here, with a few species from the Great Plains. The Colorado Plateau is surrounded by high mountains, isolating the flora and fauna. Unlike many ecosystems, the plant density, diversity and stature within the monument is determined more by substrate than climate. Consequently, isolation, plus the great diversity of substrates (providing a wider range of soil chemisty and physical characteristics) found within close proximity to each other has resulted in a high level of plant endemism in this area. Eleven species found in the monument are found nowhere else in the world. Of plants that occur only in Utah or on the Colorado Plateau, 125 pecies occur in the monument. The Canyonlands portion of the Colorado Plateau, much of which is contained in the monument, is considered the richest floristic region in the Intermountain West, and contains 50% of Utah's rare and endemic plants. 90% of these rare and endemic species are found on substrates typical of most of the monument. Of the Canyonlands area, the monument area is considered on of the most	Entire monument	Kaiparowits Power Project EIS; Axelrod, 1960; Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988; Datt, 1996; Shreve, 1942; Cronquist et al., 1977; Utah Natural Heritage Program plant database.	(b)(5) DPP (b)(5) ACP
	The Colorado Plateau was uplifted and downcut without deformation. As a consequence, large areas of unmixed geologic parent materials are exposed, and plants must adapt to large array of highly distinct parent materials. These substrates are sharply demarcated, and often occur within a few meters of each other. This situation offers the unique opportunity to examine the role of soil physical and chemical characteristics in determining plant and animal community structure independent of climatic variables, an important ecological question. It also results in different plant community structure and dynamics than is generally observed in other ecosystems. This area contains shales, siltstones, mudstones, sandstones and limestone of differing depths, and deposited in a variety of environments (marine, freshwater and eolian). Each soil depth and depositional environment has very different chemical and physical characteristics. As a result, there is a great diversity of substrates in this area, each supporting a unique plant community.	Entire monument	Hintze, 1988; Nabhen and Wilson, 1996; Gross, 1987; Dott, 1996; Roberts, 1987.	
	The presence of steep elevational gradients gives the opportunity to sort out the role of temperature and precipitation in structuring plant and animal communities. Elevational gradients have traditionally been used by scientists as a way of examining factors controlling biotic community structure. Juxtaposition of diverse substrates and elevational gradients gives an unparalleled opportunity to determine the respective roles of soil chemistry, physical characteristics, elevation, rainfall and temperature in structuring biotic communities. In addition, it allows for high biodiversity in a small area.	Entire monument	Kaiparowits Power Project EIS; Axelrod, 1960; Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988; Dott, 1996; Shreve, 1942; Cronquist et al., 1977	

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
(b)(5) DPP (b)(5) ACP	The Escalante Plateau is the home to approximately 300 species of amphibians, birds, mammals, and reptiles. This diverse set of wildlife species includes over 20 species of birds of prey including the bald eagle, peregrine falcon, and was the historical range of the condor. The region contains 2 of the 7 recognized centers of endemism for fishes of the western United States.	Escalante Plateau	Davidson et al. 1996; Tom Edwards, 1996, Behnke, R.J., and Zar, M., 1976.	(b)(5) DPP (b)(5) ACP
	Contains many different geologic substrates (therefore soils with different physical and chemical attributes) in a small area. The majority of endemic in Utah are found on these particular substrates; consequently, this area is expected to have a high concentration of endemics.	Escalante -along boundary of Glen Canyon NRA and Capital Reef National Park	Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988.	
	Large expanses of fine-textured soils (Morrison, Mancos/Tropic) shales support large number of endemic plant species, fossils.	Henrieville to Escalante	Hintze, 1988; Shulz, 1993; BLM Wilderness EIS.	
	An exposed monocline with many soils/substrates in close juxtaposition provides tremendous biodiversity of both general and endemic flora. High salt content of stream provides habitat for salt-tolerated riparian plants. Provides a elevational gradient from ponderosa pine to desert scrub. In addition, the rocky substrate has provided refugia for many Arcto-Tertiary plants, providing a unique opportunity to examine the effects of ancient floral presence in the structuring of present-day plant communities. This area also supports a very high diversity of both general and endemic flora.	The Cockscomb	Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996.	
	Contains a concentration of many different geologic substrates/soils with different physical and chemical attributes . This area has a high concentration of endemics. This boundary also abuts protected areas (Glen Canyon, Capitol Reef), thereby effectively increasing the value of all three areas for biological conservation. In addition, the Waterpocket Fold has isolated two outcrops of the same parent material. These two areas now support different floras. This presents an outstanding scientific opportunity to explore processes of speciation.	Far eastern boundary	1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al.,	

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
(b)(5) DPP (b)(5) ACP	This is an exposed monocline. Consequently, many substrates (Summerville, Morrison, Dakota, Tropic, Entrada, Navajo, Wingate and Carmel) are exposed directly next to each other, providing an opportunity for studies of ecological processes independent of climate. This monocline also has an elevational gradient, facilitating the study of effects of temperature and moisture on community dynamics. In addition, the rocky substrate has provided refugia for many Arcto-Tertiary plants, providing a unique opportunity to examine the effects of ancient floral presence in the structuring of present-day plant communities. This area also supports a very high diversity of both general and endemic flora.	Straight Cliffs area	Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978.	(b)(5) DPP (b)(5) ACP
	Diversity of plant life ranging from low desert shrub to Ponderosa Pine (less that 1 mile apart) enhances the study and observation of ecology. 3 small stands of Ponderosa pine in Alvey Wash.	Death Ridge WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Contained within the monument are 3-5 spatially separated areas where the same substrates are exposed in close proximity to each other. In addition, there are 5 elevational gradients along riparian corridors. This is critical for replicated scientific work to be conducted.	Entire monument	Hintze, 1988; USGS. Topographical Maps	
	Riparian corridor with elevational gradient, connecting desert low lands to the high country. Vermillion, White, Pink Cliffs (Triassic, Jurassic, Cretaceous material).	Johnson's Creek	Hintze, 1988; USGS Topographical Maps; Beier, 1993; Noss, 1992, 1993.	
	Fifty Mile Mountain. Presence of aspen on Pleasant Grove, Steer Canyon, and Pinto Mare Canyons.	Fifty Mile Mountain WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Protects lands at low elevation sites frequently rich in species diversity. The range of elevation in these areas from approximately 4500-8300 feet encompasses a wide variation in elevation and will capture the full diversity of plant and animal species in the region.	Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab	Hintze, 1988; Utah BIM Final Wilderness EIS, 1990	
	hanging gardens, tinajas, canyon bottom, dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals) and soil fauna. Tinajas are important aquatic resources, and contain a diverse array of tadpole, fairy and clam shrimp, amphibians, algae, water beetles, other crustaceans, snails, mosquito and gnat larvae and aquatic/riparian plants. Highly saline areas are found around many seeps and streams, and consist of plants and animals adapted to highly saline conditions. Dunal pockets contain species adapted to shifting sands, while rock crevice communities consist mostly of slow-growing species that can thrive in extremely infertile sites. These communities offer a chance to examine gene flow dynamics, and to distinguish the respective role of pollen versus seeds. They offer an opportunity to study ground water flow dynamics in the absence of significant fluvial processes, and	Entire monument	Nabhen and Wilson, 1996; Harper et al., 1994; Welsh et al., 1993; May et al., 1995; Fowler et al., 1995; Graff, 1988.	

Date Printed:

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
[redacted] (b)(5) DPP (b)(5) ACP	These canyons provide a high concentration of isolated, unique plant and invertebrate communities: hanging garden, rock crevice, and canyon bottom communities. Many relictual plant species can be found in these communities. Pack rat middens are abundant, providing paleoclimate and paleo-vegetation information.	Escalante canyons	Axelrod, 1960; BLM Wilderness EIS; Van Devender and Spauling, 1979; Fowler et al., 1995; Nabhen and Wilson, 1996.	
	Dunal pockets contribute Great Plains species to the flora. These are unique, isolated plant communities.	Cockscomb to Kaiparowits	Hintze, 1988.	
	Unique, isolated communities are located throughout the monument. These include hanging gardens, tinajas, canyon bottom, dunal pocket, salt pocket and rock crevice communities. They provide great opportunities for examining evolution, gene flow, island biogeography and other ecological principles.	Entire monument	Case and Cody, 1988; Diamond, 1981; Dott, 1996; Harris, 1984; Ludwig and Whitford, 1981; Fowler et al., 1995; Nabhen and Wilson, 1996; Roberts, 1987; Reice, 1994; Axelrod, 1960.	
	Biological conservation theory and literature suggests that large contiguous conservation areas increase both extent and probability of population survival, increases protection of migratory pathways, and is the most effective means of conserving aquatic and riparian communities.	Entire monument	al., 1996; Miller, 1961; Minckley and Deacon, 1968; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.	

Date Printed:

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[redacted]			1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al.,	
	The connection with Glen Canyon provides a larger protected area. It also provides low desert vegetation as part of the vegetational gradients. Large areas are important for maintaining the evolutionary potential of plants and animals, allowing for the exchange of genetic material among the separate populations that constitute a population.	Common boundaries and riparian connections with Glen Canyon NRA, Capitol Reef NP, Box Hollow Wilderness and Paria Wilderness		
[redacted]	Cryptobiotic soil crusts are critical for soil stability, nutrient availability for vascular plants and normal soil surface temperatures. These crusts are extremely fragile and easily disrupted by soil surface disturbances such as trampling or off-road vehicles. Since the soils in the monument are highly susceptible to erosion, it is important that these biocrusts be protected so they stabilize these erodible soil surfaces. In addition, these ecosystems have few nitrogen-fixing plants. Since these crusts provide nitrogen to these soils, they are a critical part of these nitrogen-limited ecosystems.	Entire monument	Belnap, 1994, 1995; Belnap and Harper, 1995; Belnap et al., 1994; Jefferies, 1989; Harper and Marble, 1988; Johansen, 1993; Mack and Thompson, 1978; Fleischner, 1994.	[redacted]
	Disturbance of most soil surfaces in the monument area will result in soil surface temperature changes as bio-crusted surfaces are darker than the substrates underneath them. The expected lowering of temperature with disturbance would result in cooler soil temperatures, and thus later spring plant germination and lower nutrient uptake rates. This may adversely effect desert plant growth in early spring. Surface temperatures also influence foraging and burrowing patterns for many soil invertebrates, and many effect community dynamics of these species.	Entire monument	Ludwig and Whitford 1981; Belnap 1995.	

List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
	stable documented to date, as both large and small scale disturbances are limited spatially and temporally. Very little of this area was glaciated in the Pleistocene. Most plant communities evolved without fire or grazing by large ungulate herds, as evidenced by characteristics of the soils and the flora. Catastrophic events are minimal, with the exception of wash bottoms. Microsite disturbances are minimal as well, as most soils support very low populations of invertebrates. 1880 photos repeated in 1990 show many sites virtually unchanged, with the same tree, shrub and grass individuals present, indicating very low species' turnover rates in this region relative to other ecosystems. In addition, dead tree branches can still be found in virtually the same condition as they were 100 years ago, indicating plant tissue decomposition rates are extremely low in this region. This makes this area highly unique, as most ecosystems are believed to be structured disturbance. In this region, ecological processes can be studied independent of the effects of disturbance to give us greater insight into their functioning	Entire monument	Belnap, 1995, 1996; Belnap et al., 1994; Mack and Thompson, 1982; Fleischner, 1994; Kleiner and Harper 1972; Harper et al., 1994; Webb, 1994; Rogers, 1982; Pickett and White, 1985; Moldenke, 1995; Evans and Bhleringer, 1993; Turner et al. 1993; Iverson et al. 1981; Webb and Wilshire 1981; Larsen 1996; Bowers et al. 1994.	
	Isolation of this area has resulted in minimal human impacts. Many of the ecosystems found in this area have received little, if any, human use and the type and extent of disturbance has that has occurred is known. In addition, there are large areas unbroken by roads. This is essential to the protection and conservation of plant and animal species.	Entire monument	Wilcox et al 1986; Wilcox and Murphy 1985; Mader et al., 1990; Osley, et al., 1974; Rost and Bailey, 1979; Witmer and Calesta, 1985	
	The monument lacks any areas that have been invaded to any large extent by exotic species. There are few such areas in the Intermountain West, and they can provide invaluable information in understanding the ecology and dynamics of exotic plant invasion. These areas aid scientists in understanding what makes systems resistant to such invasions, and thus help land managers predict what areas are susceptible to invasion and restore already-invaded regions.	Entire monument	Billings, 1994; Fleischner, 1994; Forcella and Harvey, 1983; Gross, 1987; Hunter, 1990; Loope et al., 1988; MacMahon, 1987; Pellant and Hall, 1994	
	Six threatened or endangered candidate species are located within or near this area.	Wahweap WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Contains Peregrine falcon (endangered) and 6 special status animal species and 5 special status plant species.	Mud Spring WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Habitat for Swainson's hawk, golden eagle (Sensitive) and peregrine falcon (endangered).	The Blues WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Peregrine falcon and bald eagle (endangered). 8 animal and 5 plant species of special status.	Paria-Hackberry and Cockscomb WSA and Wahweap WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Thirteen species of raptors are known or suspected of nesting in the WSA.	Burning Hills WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	Relict plant community in the upper part of Dry Valley "probably possesses important scientific values"	Mud Springs Canyon WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	

(b)(5) DPP (b)(5) ACP

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List of Historic and Scientific Objects of Interest
GSENM 8-30-17

Object	Description	Location	Source	Unit
(b)(5) DPP (b)(5) ACP	Unique relict plant community of pinion-juniper and sagebrush-grass park vegetation accessible only by a steep trail. One of the few remaining unaltered plant communities in Utah. No Man's Mesa RNA was designated as an ACEC in 1986. Such areas are invaluable to science. They provide restoration and management goals for administration of lands. Such areas are also critical to scientists who are trying to understand the natural functioning of ecosystems. Grasslands are especially valuable, as almost all have been heavily grazed for over a century.	Paria-Hackberry WSA (No Man's Mesa and Little No Man's Mesa)	Utah BLM Statewide Final Wilderness EIS, 1990 and Kleiner and Harper, 1972	(b)(5) DPP (b)(5) ACP
	Four Mile Bench Old Tree Area. Unique area of extremely old (1,400 years) pinon and juniper trees. Unique scientific values on over 1,000 acres.	Wahweap WSA	Utah BLM Statewide Final Wilderness EIS, 1990.	
	This region is at the northern end of areas that receive summer monsoonal rains, and is at the southern end of areas that depends on winter rains. This distinction is very important to the physiological functioning of plants in this moisture-limited areas, as even minor changes in temperature and/or rainfall may lead to major differences in water availability, and consequently, plant metabolic processes. Climate change is expected to alter both rainfall timing and amount, as well as temperature. This, in tum, would alter plant physiology, water use patterns and community composition in this region, making the monument an excellent place for studying global climate change.	Entire monument	Ayyad 1981; Graff 1988; Van Devender and Spaulding 1979; Wagner 1981.	
	Unlike most deserts that are primarily depositional environments, the CP is an erosional one (Welsh 1979; Nat Hist). This contributes to high endemism, as substrate material is not mixed. In addition, it makes this region highly susceptible to soil loss when surfaces are disturbed. This soil loss has a negative impact on plant and aquatic communities, as well as dam sediment loads.	Entire monument	Welsh, 1979; Harper et al., 1994.	
	The effects of scaling up and down are not known for many ecological processes. The multitude of variably sized, discrete watersheds found in this area offer a unique opportunity to test the effects of scaling for hydrological and biological processes. In addition, the close spacing of these watersheds offers a chance to separate the effects of area per se from other environmental factors on community structure.	Entire monument	Allen and Hoekstra 1987; Reice 1994; Pickett and White 1985; Rosenweig 1985.	
	Semi-arid and arid lands of the western United States are highly susceptible to desertification. The lack of natural disturbance in much of this area offers the opportunity to study the effects of different types and levels of land use and to better understand the steps leading to desertification.	Entire monument	Dregne, 1983.	

List of Historic and Scientific Objects of Interest
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Object	Description	Location	Source	Unit
[redacted]	This area contains few exotic plants. Having this resource gives the opportunity to better understand what factors inhibit or facilitate exotic plant invasions. Roads have been heavily implicated in facilitating exotic plant invasion, while intact Cryptobiotic soil crusts and less favorable soil chemistry may inhibit such an invasion. Invasion could fundamentally alter these communities, by altering species composition, community dynamics and fire cycles.	Entire monument	Monsen and Kitchen, 1994; Kelly 1996; Harper and Marble 1988; Davidson et al. 1996.	[redacted]
	Quaternary resources are abundant in the monument. Pack rat middens enable reconstruction of paleoclimates and paleo-vegetation, while Pleistocene animal remains found in alcoves.	Entire monument	Harper et al., 1994.	
	Unlike more mesic ecosystems, there is little evidence that desert communities demonstrate traditional successional sequences. There is little or no modification of soils or other site characteristics by previous-occurring plants. Understanding of this is important for restoration efforts. The monument offers an excellent opportunity to study this phenomenon independent of climate and disturbance factors.	Entire monument	Barbour, 1981; MacMahon, 1987; Shreve, 1942; Dott, 1996.	
	Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 7 plant and 9 animal species considered sensitive.	Death Ridge and Fifty Mile Mountain WSAs	Utah Statewide Wilderness Study Report, 1991.	
	Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 8 plant and 7 animal species considered sensitive.	Phipps Death Hollow ISA and Steep Creek WSA	Utah Statewide Wilderness Study Report, 1991.	
	Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 9 plant and 7 animal species considered sensitive.	North Escalante Canyon, The Gulch and Carcass Canyon WSAs	Utah Statewide Wilderness Study Report, 1991.	

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